Seventh Scientific and Technical Conference of Young Scientists of the Institute of Automation and Telemechanics of the AS USSR

S/103/60/021/009/013/013
B012/B063

"The Method of Synthesizing the Optimal Construction of a Digital Simulator"; R. N. Chernyshev - "Computing Amplifier With a Power Stage at the Output"; B. A. Pereverzev - "Combined Electromechanical Block of an Electric Simulator"; F. B. Gul'ko - "Quick-acting Electron Multipliers". Zh. A. Novosel'tseva spoke about "A Block for Controlled Delay"; K. B. Norkin - "A Method of Automatic Determination of the Extreme Value of a Multi-variable Function". V. A. Yakovlev - "Discrete Electric Differentiator". V. A. Brik - "Digital Computer for Compiling Programs for Machining Workpieces on a Milling Machine". The following lectures were held at the fourth section: Ye. A. Andreyeva spoke about a method of calculating the consumption and power characteristics of the "nozzle-flap" element in the case of a viscous, compressible and incompressible liquid. L. A. Tenenbaum derived formulas for the consumption and power characteristics of the "nozzle-flap" element in the case of a non-stabilized laminar flow of a viscous, incompressible liquid. T. K. Yefremova reported on pneumatic relay elements. V. S. Matorina spoke about "Magnetic Amplifiers at the Output of Alternating-current Magnets". M. A. Boyarchenkov - "Direct-current Reversible Magnetic Amplifier With Increased Efficiency" and "Action of a Magnetic Amplifier on a Counterelectromotive Force" (second

Card 6/9

16

lecture). N. L. Prokhorov gave a report on the existing memory circuits of magnetic, logical elements from the viewpoint of continuity. A. L. Rozovskiy - "Contactless Code Pulse Remote Measuring System". N. V. Silayev "Contactless Program Computer for the Automatic Operation of a Line Casting Machine". V. S. Serzhers' report dealt with the possibility of constructing circuits for proportional amplifiers, differentiators, and integrators of commercial controllers with the help of semiconductor elements. V. B. Gogolevskiy reported on transients in electromagnetic mechanisms and on the vibration of contacts. The following lectures were delivered at the fifth section: L. P. Sysoyev solved the problem of judging the parameters and detecting the signals which are linearly dependent on random parameters. M. Yu. Gadzhiyev reported on the determination of an intelligence-signal mixed with a noise in the case of an independent variation of the carrier frequencies. I. I. Paishev studied an apparatus of continuous and discrete mode of operation, which is used to expand a random function in a canonical series. E. L. Nappel'baum described an optimal operator used to determine an intelligence signal on the background of normal noise with random dispersion. A. I. Teyman spoke about problems connected with the

overshooting of random functions. Ye. S. Kochetkov explained the construction of theoretically and practically optimal, linear integral estimates of the expected value of the correlation function of steady random processes. T. I. Tovstukha's lecture dealt with the effect of random noise upon the operation of extremal control systems of the step- and gradient-types. V. M. Baykovskiy spoke about the determination of the transmissivity of a channel with discrete difference modulation in the absence of noise. V. M. Pomazan gave a report on the theoretical and experimental study of time systems in remote measurement with different cycles and different kinds of indication. The following lectures were held at the sixth section: V. D. Kazakov - "The Form of Minimum Symmetric Boolean Functions With Any Number of Variables". V. P. Didenko explained a digital method of minimizing Boolean functions in consideration of the unused state. V. V. Vorzheva gave a survey of investigations of circuits with real contacts. T. M. Aleksandridi spoke about the synthesis of switching schemes on the basis of two logical operations - the Scheffer stroke and its dual function. L. A. Gusev reported on "The Minimization of the Construction of Finite Automatic Machines (konechnyy avtomat)".

Seventh Scientific and Technical Conference of Young Scientists of the Institute of Automation and Telemechanics of the AS USSR

S/103/60/021/009/013/013
B012/B063

O. P. Kuznetsov described logical networks with unequal delay times of the various elements. V. D. Kazakov and V. V. Naumchenko spoke about "The Realization of Boolean Functions With n Variables on Contactless Logical Switches by Means of the Method of Supplement to a Definition". A. D. Talantsev reported on "The Application of Logic-algebraical Transient Operators in the Analysis and Synthesis of Finite Automatic Machines (konechnyy avtomat) of a Special Type". The following lectures were held at the seventh section: O. I. Khasayev - "The Operation of an Asynchronous Motor of a Frequency Transformer With Semiconductor Triodes". V. M. Kolesnikov - "Investigation of Thyratron Pulse Drive With a Step-by-step Motor". V. D. Vershinin - "Application of the Principle of Invariance for the Stabilization of the Speed of Direct-current Motors". O. A. Kossov - "Direct-current Drive With a Semiconductor Pulse Rectifier". Chzhao Chzhou-lun' - "Optimal Control of Flying Drum Scissors With Eccentrics". A. R. Dzhelyalov - "Induction Motor With Longitudinal and Transverse Excitation as an Object of Automatic Control".

Card 9/9

32066
S/024/61/000/006/018/019
E192/E382

16.8000 (1031, 1132, 1329)

AUTHOR: Dzhelyalov, A.R. (Moscow)

TITLE: Control of longitudinal-transverse excitation of a synchronous motor for a given rotor movement

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Energetika i avtomatika, no. 6, 1961, 129 - 141

TEXT: The theory presented in Ref. 1 (D.A. Gorodskiy - Synchronous generators with longitudinal-transverse excitation. Symposium - Investigation and design of large electrical machines and equipment. pub. TsINTI, 1960) and Ref. 2 (M.M. Botvinnik - Asynchronized synchronous machine. GEI, 1960) is applied to the problem of excitation control of a synchronous motor, which is used in the output device in a servo system. Such a system can be used for controlling the operation of high-power mercury rectifiers in DC transmission systems, control of mechanical rectifiers used in large electrolytic systems and for the supply equipment for cyclotrons. A servo system of this type is principally designed for the elimination of known

Control of ....

deviations at the synchronous rotation speed of the shaft of the commutator. It is necessary in designing the system to determine the transients during revolution of the rotor and the control function for one of the axes when the deviation angle $\vartheta(t)$ and the excitation of the second winding of the rotor are given. A synchronous motor with longitudinal-transverse excitation is described by the Park-Gorev equations (Ref. 3: M.V. Meyerov: Introduction into dynamics of the automatic control of electrical machines. AS USSR, 1956; Ref. 4: A.A. Gorev: Transient processes in synchronous machines. GEI, 1953):

$$
\begin{aligned}
-(\rho+p)\,xi_d-(1+s)\,xi_q+pe_d+(1+s)\,e_q &= u\sin\vartheta\\
-(1+s)\,xi_d+(\rho+p)\,xi_q+(1+s)\,e_d-pe_q &= u\cos\vartheta\\
-p(x-x')\,i_d+(\rho_r+p)\,e_d &= \rho_r E_d\\
-p(x-x')\,i_q+(\rho_r+p)\,e_q &= \rho_r E_q\\
C\dot{s}+M_\tau &= e_d i_q-e_q i_d
\end{aligned}
\qquad \text{Eqs. 1-5}
$$

Card 2/6

Control of ....

where the symbols are those adopted in Refs. 3 and 4. The electromagnetic transients can, in general, be described by a function of time t and the angle ϑ for a given (as yet unknown) $\vartheta = f(t)$. If the current and voltage changes are known, it is possible to find the expression for the electromagnetic torque M_e and the equation of motion for the rotor which permits determination of $\vartheta = f(t)$ for given control functions $E_d(t)$ and $E_q(t)$ and the inverse problem of determining the excitation function for one of the rotor windings for a given $f(t)$ and the excitation of the second winding. The voltages at the rings of the rotor can be represented as a sum of two components:

$$E_d = E_{d_o} - E_{d\sim}$$

$$E_q = E_{q_o} + E_{q\sim} \qquad (6)$$

Card 3/6

Control of ....

where E_{d_o} and E_{q_o} are the voltages at the rotor rings on the longitudinal axes, while $E_{d\sim}$ and $E_{q\sim}$ are the changes of these voltages during the control processes when the rotor undergoes rotation; E_d and E_q are the resulting voltages at the rotor rings during revolution of the rotor. It is shown that the solution of Eqs. (1) - (5) is found by solving the following equation:

$$RF''(\theta)\,p\theta + R\left(\frac{2}{T'}p\theta - p^2\theta\right)F'(\theta) + \left[\frac{1}{T'^2}p\theta - \frac{1}{T'}p^2\theta + (p\theta)^3\right]RF(\theta) + \\ + \left[\sin\theta p^2\theta - \frac{1}{T'}\sin\theta p\theta - 2\cos\theta(p\theta)^2\right]E_{d\sim} - \sin\theta p\theta pE_{d\sim} + \quad (26) \qquad (26)$$
$$+ \left[\cos\theta p^2\theta - \frac{1}{T'}\cos\theta p\theta + 2\sin\theta(p\theta)^2\right]E_{q\sim} - \cos\theta p\theta pE_{q\sim} = 0$$

where the various symbols are defined by:

Card 4/6

Control of ....

$$F(\theta) = Cp^2\theta + \frac{uE_d}{x}\sin\theta - \frac{uE_q}{x}\cos\theta + M_{ac}p\theta + M_r$$

$$\Phi_d(t) = \varepsilon^{-\frac{t}{T'}}\int_0^t \varepsilon^{\frac{t}{T'}} E_{d\sim}\,dt$$

$$\Phi_q(t) = \varepsilon^{-\frac{t}{T'}}\int_0^t \varepsilon^{\frac{t}{T'}} E_{q\sim}\,dt \qquad (18)$$

$$M = \frac{E_{d_0}u}{x}, \quad N = \frac{E_{q_0}u}{x}, \quad K = \frac{u}{T'x}, \quad R = \frac{1}{K}$$

in which M_{ac} is the asynchronous torque of the machine.
Eq. (26) satisfies the conditions of Eqs. (6) and permits determination of the control function for a given $\vartheta(t)$.
Eq. (26) can be simplified when
$(p\vartheta)^2 \ll 1$ and $(p\vartheta)^3 \ll 1$. In this case, it can be written as:

$$a_1(t)pE_{d\sim} + b_1(t)E_{d\sim} = F(t) \qquad (28)$$

Card 5/6

Control of ....

which is an equation with variable coefficients. The use of Eq. (28) for practical work is illustrated on a synchronous machine with longitudinal-transverse excitation, which is coupled with a DC generator. It is shown that the calculations can be carried out by using a nonlinear equation of the fifth order, the method of successive intervals, the nonlinear equation of the second order or the equation of the third order. The method of successive intervals appears to be most satisfactory in that it gives an accurate solution; on the other hand, it is comparatively laborious.
There are 6 figures, 1 table and 6 Soviet-bloc references.
SUBMITTED: March 25, 1961

Card 6/6

55

DZHELYALOV, A. R.

PHASE I BOOK EXPLOITATION SOV/6012

Akademiya nauk SSSR. Institut avtomatiki i telemekhaniki.

Avtomaticheskoye regulirovaniye i upravleniye (Automatic Regulation and Control) Moscow, Izd-vo AN SSSR, 1962. 526 p. Errata slip inserted. 9000 copies printed.

Resp. Ed.: Ya. Z. Tsypkin, Professor, Doctor of Technical Sciences; Ed. of Publishing House: Ye. N. Grigor'yev; Tech. Ed.: I. N. Dorokhina.

PURPOSE: This book is intended for scientific research workers and engineers concerned with automation.

COVERAGE: The book is a collection of articles consisting of papers delivered at the 7th Conference of Junior Scientists of the Institute of Automation and Telemechanics, Academy of Sciences USSR, held in March 1960. A wide range of scientific and technical questions relating to automatic regulation and control is covered.

Card 1/12

Automatic Regulation (Cont.) SOV/6012

The articles are organized in seven sections, including automatic control systems, automatic process control, computing and decision-making devices, automation components and devices, statistical methods in automation, theory of relay circuits and finite automatic systems, and automated electric drives. No personalities are mentioned. References are given at the end of each article.

TABLE OF CONTENTS:

Automatic Regulation (Cont.) SOV/6012

AVAILABLE: Library of Congress

SUBJECT: Automation and Computer Engineering

Card 12/12

IS/dmp/bmc
12-28-62

DZHELYALOV, A.R. (Moskva)

Dynamics of the rotor rotation of a synchronous motor with transverselongitudinal excitation. Izv. AN SSSR. Otd. tekh. nauk. Energ. i avtom. no.3:90-94 My-Je '62. (MIRA 15:6)
(Electric motors, Synchronous)

DZHELYALOV, A. R.

Dissertation defended at the Institute of Automation and Telemechanics for the academic degree of Candidate of Technical Sciences:

"Synchronous-Servo System with an Engine of Lengthwise-Transverse Excitation."

Vestnik Akad Nauk, No. 4, 1963, pp. 119-145

1. SOLOMKO, V.S. DZHELYUK, S.P.

2. USSR (600)

3. Wood Pulp Industry

4. High-speed methods for producing pulp. Bum.prom. 27 No. 6 - 1952.

9. Monthly List of Russian Acessions, Library of Congress, February, 1953. Unclassified.

1. DZHELYUK, S. P., SOLOMKO, V.S.

2. USSR (600)

4. Wood Pulp

7. Results of producing sulfate pulp from larch. Bum prom. 27 No. 10, 1952.

9. Monthly List of Russian Accessions, Library of Congress, February 1953. Unclassified.

DZHELYUK, S.P., nachal'nik laboratoriy.

Puncture resistance of paper bags. Bum. prom. 28 no.6:14-17 Je '53. (MLRA 6:6)

1. Novo-Lyalinskiy tsellyulozno-bumazhnyy kombinat. (Paper bags)

DZHELYUK, S. P.

Chemical Abst.
Vol. 48 No. 3
Feb. 10, 1954
Cellulose and Paper

The volumetric determination of sulfate in kraft liquors. S. P. Dzhelyuk. *Bumazh. Prom.* 28, No. 10, 21-3(1953).—Three volumetric methods of detg. the sulfate content of green or white kraft liquors were studied: pptn. with a standard soln. of $BaCl_2$ fol- ved by titration with standard solns. of Na_2CO_3, K- ., and Na_2HPO_4 in ascending order of accuracy. The details and results of applying each method are given. John Lake Keays

AF 9-17-54

DZHELYUK, S P

USSR

Inaccurate representation of an attempt to introduce a speed-up cooking process (in the manufacture of sulfate cellulose), S. P. Dzhelyuk (Central Lab. Pulp and Paper Combine, Novo-Dymitrovsk). *Bumazh. Prom.* 29, No. 1, 26–9 (1954).—A detailed discussion refuting the conclusions of a paper by Simkin, *C.A.* 47, 12810g, as erroneous.

Elizabeth Barabash

KRAVCHIK, Feliks Ivanovich; KANEVSKIY, I.L., retsenzent; LAPINA, N.V., retsenzent; DZHELOMANOV, T.L., nauchnyy red.; SHAKHNOVA, V.M., red.; SHISHKOVA, L.M., tekhn. red.

[Planning and organization of the repair of ships] Planirovanie i organizatsiia remonta sudov. Leningrad, Gos.soiuznoe izd-vo sudostroit. promyshl., 1961. 158 p. (MIRA 15:2)
(Ships—Maintenance and repair)

PLAKSIN, I.N.; DZHEMARD'YAN, Yu.A.; MALYSHEVA, N.G.; STARCHIK, L.P.

Study of factors affecting the nuclear reaction method of determining lithium and boron in products of ore dressing. TSvet. met. 38 no.6:18-22 Je '65. (MIRA 18:10)

LUKUTIN, V.I.; DZHEMELINSKIY, A.I.

Discussion of the article "Instructions should be revised." Avtom., telem. i sviaz' 7 no.10:41-43 O '63. (MIRA 16:11)

1. Starshiy elektromekhanik 1-y Rizhskoy distantsii signalizatsii i svyazi Pribaltiyskoy dorogi (for Lukutin). 2. Nachal'nik Batayskov distantsii signalizatsii i svyazi Severo-Kavkazskoy dorogi (for Dzhemelinskiy).

DZHEMELLA, V. (Rostov-na-Donu)

Duplex condenser block with variable capacitance. Radio no.5:39-40 My '64. (MIRA 17:6)

DZHEMELLA, V.V., inzh.; PUSTYNNIKOV, V.G., kand. tekhn. nauk

Two-parameter device for automatic control of moisture in grain.
Priborostroenie no.7:28-29 Jl '65. (MIRA 18:7)

M

Country : USSR
Category : CULTIVATED PLANTS. FRUITS. Berries.

Abs. Jour. : REF ZHUR-BIOL., 21, 1958, NO-96108

Author : Dzhemilev, A. D.; Grigorashenko, V.P.
Institut. : --
Title : The Influence of the Time of Inoculation on the Viability of the Buds and on the Output of the Material Planted.
Orig. Pub. : Sots. s.kh. Uzbekistana, 1957, No.7, 58-59

Abstract : The observations were conducted for 11 years at the fruit nursery of Samarkand Affiliate of the Institute of Horticulture imeni Shreder. The best times for inoculating for the different crops and kinds were established. The highest output of apple saplings of all varieties was with inoculation from 20 to 30 August. The pear had high adaptation in the eyes when inoculated in August. A low productivity in the saplings when inoculating in the beginning of August is explained by a reduction in the frost resistance of the buds. The

Card: 1/2

87466

9.9842
9.9160 (1041, 1060)

S/169/60/000/012/004/010
A005/A001

Translation from: Referativnyy zhurnal, Geofizika, 1960, No. 12, pp. 216-217, # 16258

AUTHORS: Yerofeyev, N. M., Dzhemilev, G. G., Perelygin, V. P., Petinov, V. P.

TITLE: First Results of Radiotechnical Observations of the Motions of Non-uniformities in the Ionosphere (Winds) Over Ashkhabad at Altitudes of 200-300 km

PERIODICAL: V sb.: Dreyfy i neodnordnosti v ionosfere. No. 1, Moscow, AN SSSR, 1959, pp. 34-39 (English summary)

TEXT: Experimental results are presented of a study of the winds in the ionosphere by the spaced reception method with small base, which was performed at Ashkhabad in the period from January 1 to June 30, 1958. The equipment is briefly described (output 2 kw in the pulse, pulse duration 150 μsec, base of the reception antenna system 100 m, photographical recording, film feed speed 15 cm/min). The processing of the records was carried out by the similar-fading method; it is shown that 20-30% of the observations yield to processing by this method. The distribution of nonuniformity drift speeds in the F region is of approximately

Card 1/2

87466
S/169/60/000/012/004/010
A005/A001

First Results of Radiotechnical Observations of the Motions of Nonuniformities in the Ionosphere (Winds) Over Ashkhabad at Altitudes of 200-300 km

Maxwellian from. The average arithmetical and the observed probable values of the drift speed are 69 and 58 m/sec respectively. The preferred motion direction is westward. The diurnal course of the velocity vector components is weakly expressed, but shows the tendency to predominating 24-hours-period. - There are 10 references.

E. S. Kazimirovskiy

Translator's note: This is the full translation of the original Russian abstract.

Card 2/2

S/169/61/000/005/041/049
A005/A130

9,9110

AUTHOR: Dshemilev, G.G.

TITLE: Observations of ionospheric conditions during the solar eclipse of June 30, 1954 by the method of backwards inclined sounding along the Ashkhabad - Moscow route

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 5, 1961, 26, abstract 5 G 222. (Izv. AN TurkmSSR. Ser. fiz.-tekhn., khim. i geol. n., 1960, no. 1, 114-117)

TEXT: Measurements were conducted by the method of backwards inclined sounding at 13.1 Mc during the eclipse from 12.30 - 19.30 o'clock Moscow time at Ashkhabad along the route from Ashkhabad to Moscow. The signals were recorded by frame survey on motion picture film. During the eclipse variations in the reflection range and width of the backscatter signal group were observed. The backwards inclined sounding method made it possible to trace the variation of signal intensity and to determine which ionospheric layers determine the propagation of the selected wave.

Card 1/2

S/169/61/000/005/041/049
A005/A130

Observations of ionospheric conditions ...

The results were compared with recording data on the intensity of radio-signals from the Moscow radar station on a 25 m wavelength (RZhFiz, 1960, no. 12, 33593) and with the intensity of radar signals from the London broadcasting station as observed by Rastogi and Sheriff. In the first case, a decrease of signal force was noticed, in the second case an increase. Therefore one can assume that the state of the ionosphere varied differently along different routes during the eclipse. There are 7 references.

N.B.

[Abstractor's note: Complete translation.]

VB

Card 2/2

DZHEMILEV, G. G., Cand Phys-Math Sci -- "Distance-frequency characteristics of the ionosphere in reversely inclined sounding during observations in Ashkhabad." Tomsk, 1961. (Min of Higher and Sec Spec Ed USSR. Tomsk State U im V. V. Kuybyshev) (KL, 8-61, 226)

33076
S/169/61/000/012/087/089
D228/D305

9,9300

AUTHOR: Dzhemilev, G. G.

TITLE: Measuring the arrival angles of back-scattered radio signals during the retrogressively inclined probing of the ionosphere

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 12, 1961, 25, abstract 12G201 (Izv. AN TurkmSSR. Ser. fiz.-tekhn., khim. i geol. n., 1961, no. 3, 17-22)

TEXT: The author gives the results of measuring the arrival angles of back-scattered signals during the retrogressively inclined probing of the ionosphere and of the magneto-ionic components during the vertical probing of the ionosphere. The measurement procedure is briefly described together with the scheme of N. K. Titov's antenna system, which was used to measure the arrival angles of radio signals in the vertical plane. The

Card 1/2

33076
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D228/D305

Measuring the arrival...

frequency of the inclined probing was constant--11.5 mc/s. It is shown that back-scattered signals arrive with an extremely wide angular spectrum, which is explained by the presence in the ionosphere of irregularities in vertical and horizontal planes and also by the properties of the dispersion region at the ground surface. The difference in the arrival angles of the magneto-ionic components of radio signals reflected from the F2 layer during vertical ionospheric probing amounts to $\sim 1^{\circ}$. In addition to this, the arrival angle of the normal component is $\sim 87 - 88^{\circ}$, which agrees with the data of other research workers. It is concluded that N. K. Titov's antenna system gives sufficiently satisfactory results in the measurement of the arrival angles of rays close to the vertical. It is necessary to use acutely-set antennas for measuring the arrival angles of separate signals from the group of back-scattered signals. [Abstracter's note: Complete translation.]

Card 2/2

DZHEMILEV, G.G.; YEROFEYEV, N.M.; PERELYGIN, V.P.; PETINOV, V.P.

Studies of structural inhomogeneities and drifts in the ionosphere over Ashkhabad at altitudes of 200 to 400 km. conducted under the programs of the International Geophysical Year and International Geophysical Cooperation during 1958-1959. Trudy fiz.-tekh. inst. AN Turk. SSR 8:175-200 '62. (MIRA 15:11)
(Ashkhabad--Ionospheric research)

POPEL', S.I.; YESIN, O.A.; DZHEMILEV, N.K.

Adhesion of carbon iron alloys to slags. Izv. vys. ucheb. zav.; chern. met. 6 no.6:5-10 '63. (MIRA 16:8)

1. Ural'skiy politekhnicheskiy institut.
(Iron alloys) (Surface tension)

POPEL', S.I. (Sverdlovsk); SMIRNOV, L.A. (Sverdlovsk); TSAREVSKIY, B.V. (Sverdlovsk); DZHEMILEV, N.K. (Sverdlovsk); PASTUKHOV, A.I. (Sverdlovsk)

Effect of vanadium on the density and surface properties of liquid iron. Izv. AN SSSR. Met. no.1:62-67 Ja-F '65. (MIRA 18:5)

DZHEMILEV, N.K.; POPEL', S.I.; TSAREVSKIY, B.V.

Isotherms of density and surface tension of manganese and silicon melts. Porosh. met. 5 no.10:71-74 O '65.
(MIRA 18:11)

1. Ural'skiy politekhnicheskiy institut imeni Kirova.

L 6378-66 EWT(1) GW

ACC NR: AP5026764 SOURCE CODE: UR/0286/65/000/017/0044/0044

INVENTOR: Dzhemilev, R. A.; Dolgirev, Ye. I.; Lyubavin, Yu. P.; Meyyer, V. A.; Nakhabtsev, V. S.; Ochkur, A. P.; Shapkov, G. G.

TITLE: Pickup for a radiometric x-ray analyzer. Class 21, No. 174285 [announced by Special Design Office of the State Geological Committee SSSR (Osoboye konstruktorskoye byuro Gosudarstvennogo geologicheskogo komiteta SSSR); Leningrad State University (Leningradskiy gosudrastvennyy universitet); and All-Union Scientific Research Institute of Exploratory Geophysics (Vsesoyuznyy nauchno-issledovatel'skiy institut razvedochnoy geofiziki)]

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 17, 1965, 44

TOPIC TAGS: x ray analysis, x ray equipment, radiometry

ABSTRACT: This Author's Certificate introduces a pickup for a radiometric x-ray analyzer. The unit consists of a housing and a lead shield with collimation channels at an angle. A primary gamma source and x-ray detector are located in these channels. X-radiation is recorded in ore and rock deposits under natural conditions through a window in the housing made of a material with a low atomic number located at the vertex of the angle formed by the collimation channels.

UDC: 550.839 : 621 : 308.8

Card 1/2

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L 6378-66
ACC NR: AP5026764

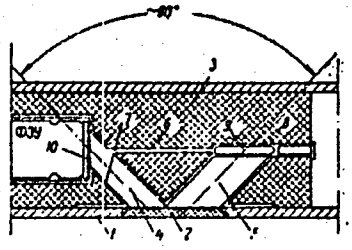


Fig. 1. 1--probe covering; 2--input window made of a material with a low atomic number; 3--lead shielding; 4--collimation channel of the detector; 5--collimation channel for the source; 6--channel for primary gamma rays used as a reference; 7--layer of material for screening out rays from the shielding; 8--can for the source; 9--source of gamma rays; 10--x-ray detector

SUB CODE: EE,EM/ SUBM DATE: 19Mar64/ ORIG REF: 000/ OTH REF: 000

Card 2/2

DZHEMILEV, Z.A.; PEREPELKINA, L.D.

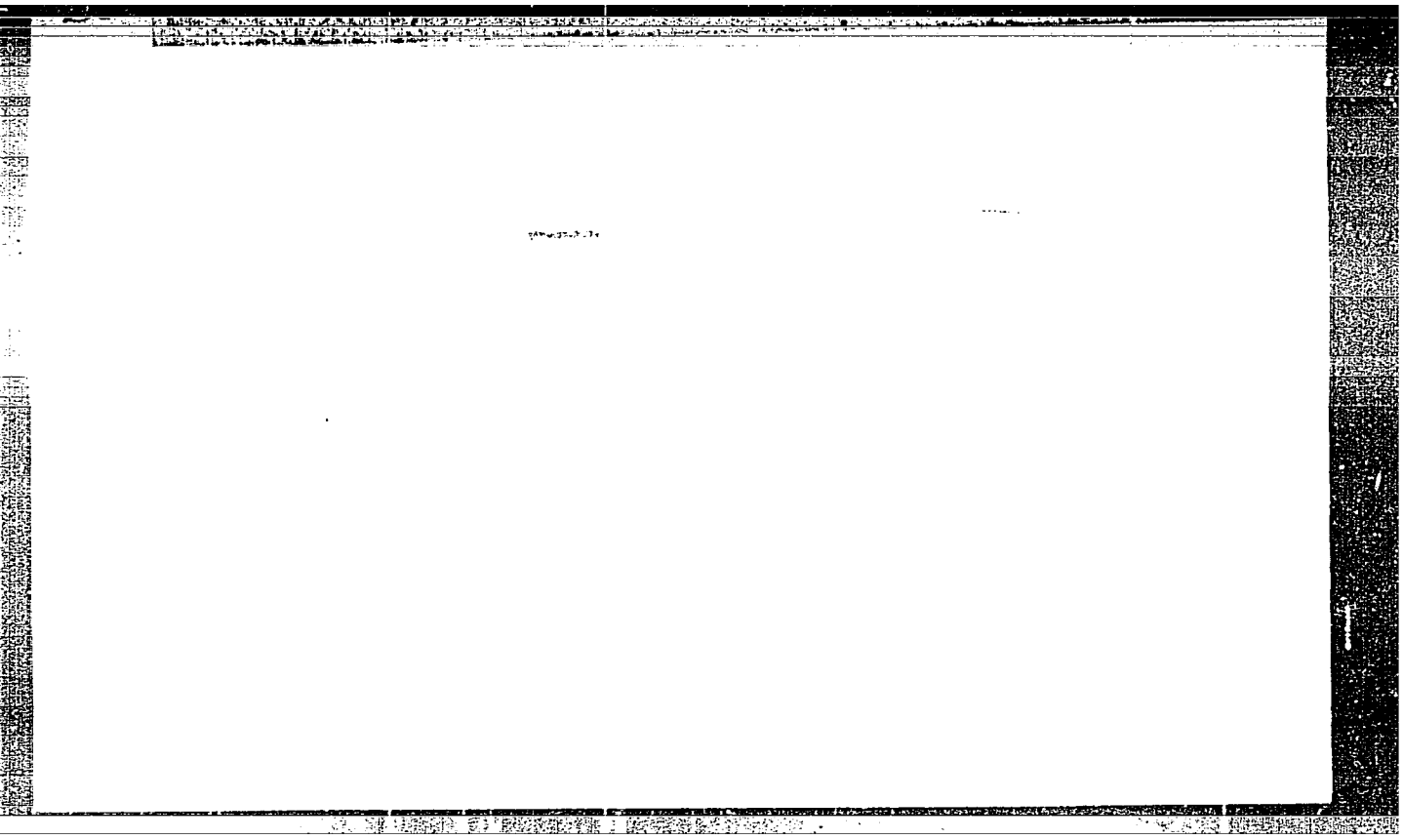
Cytogenetic radiosensitivity of various phases of cell cycle in the embryonic tissue of mice. Radiobiologia 4 no.6:822-827 '64. (MIRA 18:7)

1. Institut eksperimental'noy patologii i terapii AMN SSSR, Sukhumi.

DZHEMS-LEVI, D.Ye.

Citrin in hypertension. Klin. med., Moskva 31 no. 1:82-83 Jan 1953.
(CLML 24:1)

1. Of the Therapeutic Division (Head -- Honored Physician RSFSR M. A. Khondzinskiy) Shchelkovsk Hospital.



APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000411910008-7"

DZHEMS-LEVI, D.Ye.

Possibility of damaging the cornua cartilaginis thyroideae and the hyoid bone in injuries of the neck. Vest.oto-rin. 18 no.5:137-138 S-O '56. (MLRA 9:11)

1. Iz Byuro sudebnomeditsinskoy ekspertizy Moskovskogo oblastnogo otdela zdravookhraneniya.

(LARYNGEAL CARTILAGES, wounds and inj. fract. thyroid cartilage in inj. of neck in aged)
(HYOID BONE, vract. in aged in inj. of neck)

DZHEMS-LEVI, D.Ye.

DZHEMS-LEVI, D.Ye. (Moskva)

Case of spontaneous rupture of the enlarged aprt of the aortic arch in stricture of its isthmus. Nov.khir.arkh. no.4:79 Jl-Ag '57. (MIRA 10:11)
(AORTA--DISEASES)

DZHEMS-LEVI, D.Ye.; IMMAMATOVA, A.D.

Case of ascariasis of the liver and pancreas. Med.parez. i parazi. bol. 27 no.1:109 Ja-F '58. (MIRA 11:4)
(ASCARDIS AND ASCARIASIS)

DZHEMS-LEVI, G. Ye.

DZHEMS-LEVI [James Levy]

USSR/Mathematics - Nomograms Jul/Aug 52

"Projective Transformation of Nomograms," G. Ye. Dzhems-Levi [James-Levy]

"Uspekh Matemat Nauk" Vol VII, No 4 (50), pp 147-151

Expounds the elementary theory of Pentkovskiy net (cf. Pentskoviy, "Nomography," State Tech Press, 1949) with 3 immobile points. Also proposes a new method for graphically constructing such a net, and modifies somewhat the procedure for utilizing it. States that nomograms of smoothed points have wide application mainly because a wide class of eqs are included and at the same time they possess good adaptability; that is, can be transformed variously so that requirements can be satisfied for fixed dimensions of a diagram. 225T62

DZHEMS--LEVI, G. Ye.

DZHEMS-LEVI, G.Ye.

Normalized Massau determinants and approximated construction of nomograms. Uch.zap.Mosk.un. no.163:133-136 '52. (MIRA 8:5)
(Nomography (Mathematics))

IZHEMS-LEVI, G.Ye.

IZHEMS-LEVI, G.Ye.

Projective transformations and nomograms. Uch.zap.Mosk.un.165: 208-211 '54. (MLRA 8:2)
(Transformations (Mathematics)) (Nomography (Mathematics))

LIPATOVA, D.L.; DZHEMS-LEVI, G.Ye.

Standardization of projective transformations. Uch. zap. Mosk. un. no.181:235-240 '56. (MLRA 10:4)
(Transformations (Mathematics)) (Monography (Mathematics))

AUTHOR DZHEMS - LEVI G.Ya.

TITLE On the Problem of General Anamorphosis. PA - 3004
(K probleme obshchey anamorfozy, -Russian)

PERIODICAL Doklady Akademii Nauk SSSR,1957,Vol 113,Nr 2,pp 258-260 (U.S.S.R.)
Received 6/1957 Reviewed 6/1957

ABSTRACT The main problem of nomography remains the explanation of the conditions under which a given equation $y = F(x,y)$ can be represented in form of Soro's equation $\begin{vmatrix} \varphi_1(x) & f_1(x) & 1 \\ \varphi_2(x) & f_2(x) & 1 \\ \varphi_3(x) & f_3(x) & 1 \end{vmatrix}$ This equation of SORO determines the scale of the nomogram from the equated points (?) $u = \varphi_1(x)$, $u = \varphi_2(y)$, $u = \varphi_3(z)$; $v = f_1(x)$, $v = f_2(y)$, $v = f_3(z)$. So far there is to the author's opinion no efficient method for solving this problem. However, a way can be found that for the lack of an exact nomogram leads to an approximate one. The present paper starts from the assumption that $F(x,y)$ in the domain of the x,y -plane under consideration can be differentiated frequently enough and that in any subdomain $\bar{G}$ of the domain G it is valid $F_x F_y \neq 0$. The problem is solved as follows: It is assumed that the equation $z = F(x,y)$ is exactly nomographed. By finding the functions f_i, φ_i it is investigated if the equation $\begin{vmatrix} \varphi_1(x) & f_1(x) & 1 \\ \varphi_2(y) & f_2(y) & 1 \\ \varphi_3\{F(x,y)\} & f_3\{F(x,y)\} & 1 \end{vmatrix} = 0$ is identically satisfied.

If the equation initially given is nomographed, the finally given equa-

Card 1/2

tion can be looked upon as identical. By differentiating this equation three times with respect to x, several equations are obtained. The system resulting from having eliminated $\varphi_2(y)$, and $f_2(y)$ is put down explicitly. After a substitution this system can be considered a system of two ordinary differential equations with the two unknown functions $f_3(z)$ and $\varphi_3(z)$. This system is then reduced to a system of two equations of secondary order. In the general case from this system the functions $f_3(z)$ and $_3(z)$ are determined, which are dependent from 4 integration constants. Finally the two special cases are discussed that $z=F(x,y)$ can be shown in form of $f_1(x)+f_2(y)=f_3(z)$ or $f_1f_2f_3+\varphi_2(f_1+f_3)+\psi_2=0$ respectively. In both cases the matter is reduced to the determination of the constant from algebraic equations.
(Without illustrations)

ASSOCIATION Computation Centre of the Academy of Sciences of the USSR
PRESENTED BY DORODNITSYN, Member of the Academy
SUBMITTED 6.10.1956
AVAILABLE Library of Congress

DZHEMS-LEVI, G. YE.

20-3-3/59

AUTHOR: Dzhems-Levi, G.Ye.

TITLE: Nomography Without Quadratures. (Beskvadraturnoye nomografirovaniye)

PERIODICAL: Doklady Akad.Nauk SSSR, 1957, Vol. 115, Nr 3, pp. 438-440 (USSR)

ABSTRACT: The working nomograph from the balanced points shall here be constructed for a given equation $z = F(x,y)$, $x_1 \leq x \leq x_2$, $y_1 \leq y \leq y_2$ (1) which is sometimes written down here in the form $x = \Psi(y,z)$ For this monograph the equation by Masso has the form

$$\begin{vmatrix} f_1(x) & \varphi_1(x) \\ f_2(y) & \varphi_2(y) \\ f_3(z) & \varphi_3(z) \end{vmatrix} = 0 \quad (2)$$

Here the f_i and φ_i ($i = 1,2,3$) shall be determined. The x and the z be the independent variables and y be their function. The derivations $\partial y/\partial x, \partial^2 y/\partial x^2$ obtained from equations ((1) and (2) are equated. The course of the calculation is shortly outlined here. 6 algebraic equations for 6 unknown functions are obtained and the here-obtained functions will depend on 36 constants. 8 constants can be selected by the use of projective parameters. When the functions f_1 and φ_1 are known, the rest of the elements of the Masso determinant is algebraically determined. The determination of the constants and the examination of the agreement of the thus constructed Masso equation and of the initial equation solves the problem of the nomographiability of Masso's equation. The existence of the second derivatives of $F(x,y)$ is generally sufficient for the solution of the

Card 1/2

D z Hems-Levi, G. Ye.

26(0); 28(2) PHASE I BOOK EXPLOITATION SOV/5365

Akademiya nauk Azerbaydzhanskoy SSR

Tezisy dokladov Soveshchaniya po vychislitel'noy matematike i primeneniyu sovetov vychislitel'noy tekhniki (Outlines of Reports of the Conference On Computational Mathematics and the Use of Computer Techniques) Baku, 1958. 63 p. 400 copies printed.

Additional Sponsoring Agencies: Akademiya nauk SSSR. Vychislitel'nyy tsentr, and Akademiya nauk SSSR. Institut avtomatiki i telemekhaniki.

No contributors mentioned.

PURPOSE: This book is intended for pure and applied mathematicians, scientists, engineers and scientific workers, whose work involves computation and the use of digital and analog electronic computers.

COVERAGE: This book contains summaries of reports made at the Conference on Computational Mathematics and the Application of Computer Techniques. The book is divided into two main parts. The first part is devoted to computational mathematics and contains 19 summaries of reports. The second section is devoted to computing techniques and contains 20 summaries of reports. No personalities are mentioned. No references are given.

Card 1/ 7 1.

Dzhems-Levi, G.Ye.

DZHEMS-LEVI, G.Ye. (Moskva)

Nomography of equations of the fourth nomographic order.
Mat. sbor. 44 no.1:123-130 Ja '58. (MIRA 11:2)

(Nomography (Mathematics))

DZHEMS-LEVI, G. Ye.

16(1) P. 6; 8 PHASE I BOOK EXPLOITATION SOV/2445

Akademiya nauk SSSR. Vychislitel'nyy tsentr

Vychislitel'naya matematika (Computational Mathematics) Moscow, Izd-vo AN SSSR, 1959. 183 p. (Series: Its: Sbornik, 4) Errata slip inserted. 5,000 copies printed.

Resp. Ed.: V. A. Ditkin, Professor; Ed.: M. V. Yakovkin; Tech. Ed.: I. N. Guseva.

PURPOSE: This book is intended for applied mathematicians, scientists, and engineers.

COVERAGE: This book contains seven articles concerning the development of new methods of constructing nomograms of practical value in computations. The first two articles, which make up the largest part of the book, deal with various aspects of practical nomography. Much attention is paid to the nomograms with movable scales and to the nomographing of canonical forms. Projective transformations of alignment nomograms, design of nomograms on high speed computers, nomograms of polynomials, elements of the theory of nets and their application to nomography are also discussed

Card 1/8

in the book. References accompany each article.

TABLE OF CONTENTS:

Card 2/8

Ch. II. Nomograms With Orientated Movable Scale for Equations Representable by Alignment Nomograms

Card 3/8

AVAILABLE: Library of Congress

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10-30-59

DZHEMS-LEV, G. YE.

PHASE I BOOK EXPLOITATION SOV/3342

16(0)

Akademiya nauk SSSR. Vychislitel'nyy tsentr

Vychislitel'nye matematika (Computer Mathematics) Moscow, Izd-vo AN SSSR, 1959. 118 p. (Series: Its: Sbornik, 5) Errata slip inserted. 3,200 copies printed.

Resp. Ed.: V. A. Ditkin, Professor; Ed.: N. V. Yakovkin; Tech. Ed.: S. G. Matrovich.

PURPOSE: This book is intended for applied mathematicians, scientific workers, engineers and scientists whose work involves computation.

COVERAGE: This book contains 9 articles on problems in computer mathematics. Three articles are devoted to problems of Monte Carlo. There are individual articles on approximate integration of ordinary differential equations, the approximate integration of multiple integrals, finding values with arbitrary first order ordinary differential equations, the approximate distribution, stochastic processes, and the Monte Carlo method, and the finding of the original function when its transform is a proper rational fraction. References accompany each article.

Card 1/4

DZHEMS-LEVI, G.Ye.

Nomographic proof of certain theorems. Uch.zap.Mosk.un. no.186[a]:249-252 '59. (MIRA 13:6)
(Nomography (Mathematics))

KRAPIVIN, Nikolay Nikolayevich, starshiy prepodavatel'; DZHEMS-LEVI, G.Ya., kand.fiz.-matem.nauk, retsenzent; SHAYN, P.B., kand. tekhn.nauk, retsenzent; CHLOYAN, M., red.; KARZHAVINA, Ye., tekhn.red.

Sergei Alekseevich Chaplygin. Lipetsk, Lipetskoe knizhnoe izd-vo, 1960. 19 p. (MIRA 14:2)

1. Lipetskiy pedagogicheskiy institut (for Krapivin).
(Chaplygin, Sergei Alekseevich, 1869-1942)

DZHEMS-LEVI, G.E. BR 25

PHASE I BOOK EXPLOITATION SOV/5962

Vsesoyuznoye soveshchaniye po vychislitel'noy matematike i primeneniyu sredstv vychislitel'noy tekhniki, Baku, 1958.

Trudy (Transactions of the All-Union Conference on Computer Mathematics and Applications of Computers) Baku, Izd-vo AN Azerbaydzhanskoy SSR, 1961. 254 p. 500 copies printed.

Sponsoring Agency: Akademiya nauk Azerbaydzhanskoy SSR. Vychislitel'nyy tsentr.

Eds.: A.A. Dorodnitsyn, S.A. Aleskerov, and K.F. Shirinov; Ed. of Publishing House: A. Til'man; Tech. Ed.: T. Ismailov.

PURPOSE: The book is intended for mathematicians and other specialists interested in computer theory and uses for computers.

COVERAGE: The book contains the texts of 24 papers presented at the All-Union Conference on Computer Mathematics and Applications of Computers held in Baku, 3-8 Feb 1958. The "Resolution"

Card 1/6

of the conference, consisting of proposals for accelerating the development of computer mathematics and computer engineering, is also included.

TABLE OF CONTENTS:

DZHEMS-LEVI, G.Ye. (Lipetsk); KAZ'MIN, V.V. (Lipetsk)

Nomograms with uniform rectilinear scales. Nom. sbor. no.2: 133-140 '64. (MIRA 18:3)

DZHEMS-LEVI, G.Ye. (Lipetsk)

Anamorphism of functions and general anamorphisms. Nom. sbor. no.2:172-177 '64. (MIRA 18:3)

CA Dzhemukhadze, Konstantin Melitonovich 12

Transformations of tannins precipitable by the Stiasny method, during treatment of the tea leaf. K. M. Dzhemukhadze. *Biokhimiya Chainogo Proizvodstva Sbornik* No. 3, 111-18(English summary)(1946).—Employment of the pptn. methods of Stiasny and Fischer-Bergmann (cf. Kursanov and Kryukov, following abstr.) at various stages of existence of the leaf during industrial tea manuf., showed that the decline of tannins precipitable by the Stiasny method accounts for the decline of tannins noted during the treatment. This fraction declines rapidly during fermentation and reaches some 20–30% of initial value after a 21-hr. enzymic action (oxidative). The Stiasny not-precipitable fraction remains substantially const. except after the longest fermentation exposure studied (21 hrs.). G. M. K.

CA

12

Biochemical control of wilting of the tea leaf. K. M. Lybenukhadze. *Biokhimiya Chainogo Proizvodstva No. 3*, 125–41 (English summary 142 (1946)).—As a result of examn. of available literature (25 references) and results obtained at several tea factories in U.S.S.R., the following conclusions are made. The process of artificial (thermal) wilting commonly used causes considerable alteration in the phys. chem. properties of the tea leaf. The most suitable indexes for these changes are sol. N and tannin content. When the process is correctly performed the former should rise while the latter should be essentially const. (or slightly decreased). The standards vary with the mech. installations used, but generally the residual H_2O should be 60–65%.

G. M. Kosolapoff

CA

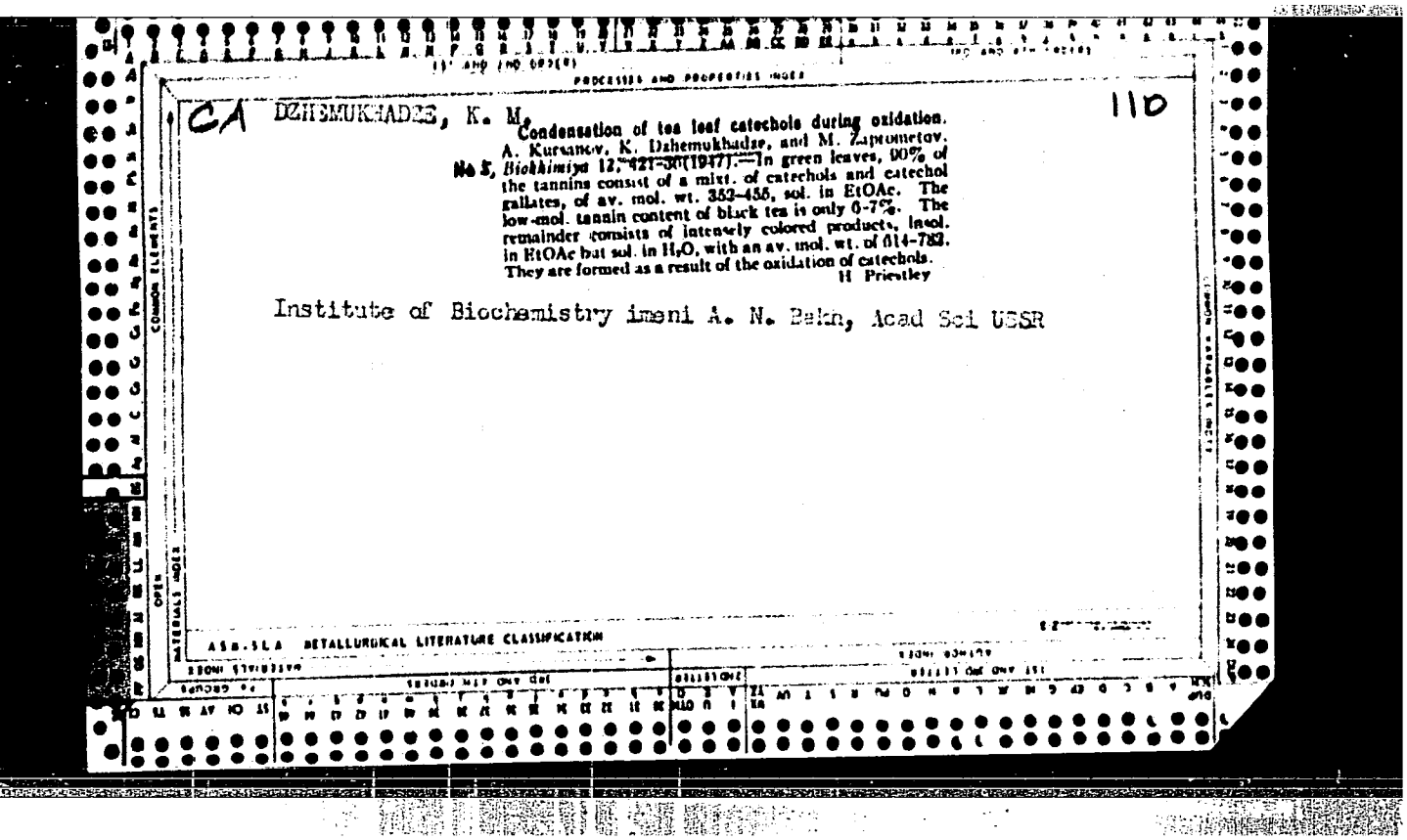
12

Technology of crystalline tea. M. A. Bokuchava and K. M. Dzhemukhadze. *Biokhimiya Chainogo Proizvodstva Sbornik* No. 5, 148-63(1946).—A summary of the experience of production of "crystalline" tea. The process developed at the Biochem. Institute (A.N. Bakh) in 1941, consists of mech. working, drying, hot aq. extn., filtration, concn. of ext., drying, and tableting. Teas from Georgian S.S.R. contain 25-6% tannins in products from high grades of tea, and about 24% when made from cheaper grades. High-grade products contain 22-3% sol. N compds., 6-7% caffeine, and 32-4% carbohydrates and pectins. In poorer grades the former 2 classes are lower and the latter is correspondingly higher. Both black and green products are made, which are possessed of good taste and flavor qualities. Usual tableting (final step) is made with added sugar in various amts., such as 0.15-0.25 g. tea per 5-6 g. sugar for sweet variety commonly used in the locale. G. M. Kosolapoff

/2

A stimulating beverage from tea leaves. K. M. Dzhmukhadze and M. A. Bokuchava. *Biokhimiya Chainogo Proizvodstva, Sbornik* No. 5, 101-3 (English summary) (1946). Tea-leaf matter is extd. with aq. EtOH, preferably cognac alc., by using 10-20 parts alc. per 1 part tea leaf. The product contains (av.) EtOH 40-2%, caffeine 28-70 mg. per 100 ml., tannins 300-800 mg. per 100 ml., and vitamin C 3.4-14 mg. %. The extn. is best of 6-7 hrs. duration.

G. M. Kosolapoff



CA DZHEMUKHADZE, K. M.

110

Condensation of tea leaf catechols during oxidation. A. Kursanov, K. Dzhemukhadze, and M. Zaprometov. *Biokhimiya* 12, 421-30(1947).—In green leaves, 90% of the tannins consist of a mixt. of catechols and catechol gallates, of av. mol. wt. 352–455, sol. in EtOAc. The low-mol. tannin content of black tea is only 0-7%. The remainder consists of intensely colored products, insol. in EtOAc but sol. in H_2O, with an av. mol. wt. of 614–782. They are formed as a result of the oxidation of catechols.
H Priestley

Institute of Biochemistry imeni A. N. Bakh, Acad Sci USSR

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

DZHEMUKHADZE, K. M.

USSR/Chemistry - Gallic Acid
Chemistry - Tea, Tannins in

Jan/Feb 1948

"Gallic Acid in Composition With Tea Tannin," A. L. Kursanov, K. M. Dzhemukhadze, Inst of Biochem imeni A. N. Bakh, Acad Sci USSR, Moscow, 5 pp

"Biokhim" Vol XIII, No 1

Show that free and ester-bonded gallic acid is present in the leaves of all tea family shrubs grown in Georgia. Tests to determine the comparative amounts of free and compounded gallic acid present in green leaves, and the black tea obtained from these green leaves.

Submitted 11 Jun 1947

PA 64T24

C.A.

11 D

Effect of conditions of growing on the tannin content of green leaf, in the tea plant. K. M. Dzhemukhadze. *Inst. Abad. Nauk S.S.S.R., Ser. Biol.* 1950, No. 3, 58-68.—The sol. tannin fraction of tea leaves (grown in Georgia region of USSR) shows variation which depends on external conditions. Thus a severe rise of temp. and lowering of humidity decrease the BuOAc fraction of tannins, caused apparently by condensation of the sol. materials into insol. substances as a result of H_2O deficiency. Generally the tannin content is proportional to the total yield of tea leaves per plant. Usually tannins show a sharp rise between June and July with a decline in late August, although the geography of the culture has a significant effect, as above. G. M. Kosolapoff

Inst. Biochem. im. A. N. Bakh, AS USSR

CA 11D

Tannins and quality of tea raw materials. K. M. Dzhemukhadze [illegible] (Chaiwaya Promyshlennost', [illegible]) [illegible] The quality of green tea correlates well with the tannin content. With leaf age, the EtOAc-sol. fraction decreases and the high mol. wt. aq. fraction increases. When fertilization of the soil brings about an improved yield of tea, the leaves show no decrease of tannin and no significant changes among tannin fractions. The effects of geographic location (climate, etc.) on tannin compn. is shown graphically, especially in respect to the EtOAc-sol. fraction which is lowered by high air temp. and low relative humidity. G. M. Kosolapoff

CA

12

Biochemical control and tea quality. K. M. Dzhemukhadze. *Biokhimiya Chainogo Proizvodstva Sbornik* No. 6, 133–43(1950).—A summary of the experience of some 6 years in introduction of scientific control methods into the tea production industry in U.S.S.R. Considerable improvements in quality and standardization are noted. G. M. K.

Fermentation of tea. A. L. Kursanov. *Biokhimiya Chainogo Proizvodstva Sbornik* No. 5, 7-14(1946).—Review with 29 references. G. M. Kosolapoff

USSR/Biology - Biochemistry

Card 1/1 Pub. 22 - 48/63

Authors : Dzhemukhadze, K. M., and Shal'neva, G. A.

Title : Conversion of catechins during the growth of the tea leaf

Periodical : Dok. AN SSSR 99/6, 1069-1071, Dec 21, 1954

Abstract : Experiments were conducted in 1954 at the plantations of the Chakvinsk Branch of the All Union Scientific Research Tea and Tropical Cultures Institute to determine the quantitative and qualitative conversions of catechin which take place during the growth and development of the tea leaf. The results obtained are described. Fourteen references : 13-USSR and 1-English (1941-1952). Tables; illustration

Institution : Academy of Sciences USSR, The A.N.Bakh Institute of Biochemistry

Presented by : Academician A. I. Oparin, October 20, 1954

Dzhemukhadze, K. M.

Tannin substances of raw tea from Krasnodar region. K. M. Dzhemukhadze and G. A. Shul'neva (A. N. Bakh Biochem. Inst., Moscow). *Izvest. Akad. Nauk S.S.S.R., Ser. Biol.* 1955, No. 6, 59-65.—Considerable variations exist in the tannin content of tea plants grown in various areas in Krasnodar region. Generally progression to the north causes reduced total tannin content. Among the catechols of the tannins the predominant substances are gallic acid derivs. of catechols, specifically *l*-epigallocatechol gallate (I). Catechols reach max. concn. in the mid-summer and decline in the autumn; I shows especially great seasonal variations. G. M. Kosolapoff

(1)

DZHEMUKHADZE, K.M.; SHAL'NEVA, G.A.

Method of quantitative paper chromatography of catechin in tea leaves. Biokhimiia. 20 no.3:336-338 My-Je '55 (MLRA 8:10)

1. Institut biokhimii im. A.N.Bakha Akademii nauk SSSR, Moskva.
(CATECHOL, determination,
in tea leave, chromatography)
(CHROMATOGRAPHY,
of pyrocatechol in tea leave)
(TEA,
pyrocatechol in tea leave, chromatography)

DZHEMUKHADZE, K. M.

Geographic variability of catechins in leaves of tea. K. M. Dzhemukhadze and G. A. Shal'neva (A. N. Bakh Biochem. Inst., Moscow). *Doklady Akad. Nauk S.S.S.R.* 104, 880–1(1955).—Analysis of catechol components of tea leaves from specimens of plants of northern and southern areas of Armenian SSR showed that a northward progression results in relative increase of *l*-epigallocatechin, *l*-epicatechin, *dl*-catechin, no change in *dl*-gallocatechin, and *l*-epicatechin gallate, and decrease in *l*-epigallocatechin gallate, which generally makes up some 60% of total catechin.
G. M. Kosolapoff

DZHEMUKHADZE, K.M.

Seasonal variations of catechins of the tea plant. K. M. Dzhemukhadze and G. A. Shal'neva (A. N. Bakh Biochem. Inst., Acad. Sci. U.S.S.R., Moscow). *Doklady Akad. Nauk S.S.R.* 105, 1034–8(1955); cf. *C.A.* 49, 7656f.—MD
Chromatographic examn. of the catechins in leaves of a tea plant showed that the most intensive synthesis of these substances takes place in midsummer; *l*-epigallocatechin gallate shows the most energetic accumulation and synthesis. Gallocatechins predominate throughout the season. The content of *l*-epigallocatechin, *dl*-gallocatechin, *l*-epicatechin and *dl*-catechin, and *l*-epicatechin gallate is shown graphically over the summer and fall months. G. M. K.

DZHEMUKHADZE, K. M. Doc Biol Sci --(diss) "Biochemical characteristics of tea leaves as technological raw material." Mos, 1957. 31 pp (Acad Sci USSR. Inst of Biochemistry im A. N. Bach), 110 copies (KL, 43-57, 87)

DZHEMUKHADZE, K.M.; SHAL'NEVA, G.A.; MILESHKO, L.F.

Transformation of catechins during the fermentation of tea [with summary in English]. Biokhimiia 22 no.5:888-893.S-O '57.
(MIRA 11:1)

1. Institut biokhimii im. A.N.Bakha Akademii nauk SSSR.
(TEA) (FERMENTATION) (CATECHIN)

20-114-3-42/60

AUTHORS: Dzhemukhadze, K. M., Shal'neva, G. A.

TITLE: Catechines From Tea Seedlings (Katekhiny prorostkov chaya)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol. 114, Nr 3, pp. 606-608 (USSR)

ABSTRACT: Relevant scientific publications contain no data on the quantitative fluctuations of catechines in early stages of development of the tea plant. Therefore this question commands some interest, particularly because it is known that catechines and substances related to them play an important part in vegetable metabolism. The authors of the paper under review studied catechines both in embryonic tea seeds and in germinating seedlings. Catechines are extracted from powdery seeds by means of acetones and placed upon chromatographic paper (30 - 100 l). The tannine substances of the tea leaf were used for purposes of identification. The determination of catechine in the chromatographs and the qualitative analysis were conducted with a vanillic solution of 1 % in concentrated HCl. Neither the authors of the paper under review nor other scientists have succeeded in discovering catechines in the cotyledons of germinating seeds. In the embryons of the resting seeds sub-

Card 1/3

stances were found which react qualitatively to fluorogluoine. However, attempts to isolate or to identify these substances were not successful. At the same time the authors of the paper under review were able, after a short moistening of the seeds, to prove quantitatively the existence of catechines. Judging from the spots in the chromatograph, these catechines probably are ℓ-epicatechine, ℓ-epigallocatechine and ℓ-epicatechinegallate. Altogether these substances amounted to 0,2 mg per 1 g of the dry substance. Thus it is possible to prove, already in the germinating stage in the embryons of tea seeds, the existence not only of simple catechines but also of gallate. The development of the seed is accompanied by an increased catechine synthesis. In this context, there exists already in the early stages a difference in concentration between the different organs. All this points to an important biological part of the catechines in the interior of the plants. There are 1 figure, 1 table, and 12 references, 11 of which are Slavic.

ASSOCIATION: Institute of Biochemistry of Plants imeni A. N. Bakh, AN USSR (Institut biokhimii rasteniy im. A. N. Bakha Akademii nauk SSSR)

Catechines From Tea Seedlings 20-114-3-42/60

PRESENTED: February 27, 1957, by A. I. Oparin, Member of the Academy

SUBMITTED: February 23, 1957

Card 3/3

AUTHORS: Dzhemukhadze, K. M., Mileshko, L. F. 20-114-4-49/63

TITLE: Changes Occurring in Catechins in the Course of the Rolling up of Tea Leaves (Izmeneniye katekhinov pri skruchivanii chaynogo lista)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol. 114, Nr 4, pp. 859-861 (USSR)

ABSTRACT: One stage in the production of tea is called the "rolling of the raw material of tea". Investigations showed that on this occasion a destruction of the leaf tissues takes place. Therefore the cell content is subjected to intense transformations. An intensive oxidation of the tannines takes place, to which is due the formation of the quality indices of the black Bayvakh-tea. The catechins form the major part of the tannines in the tea leaf. However, there do not exist any data on their transformations in tea-leaves during rolling. It was the aim of the present paper to fill this gap. The tests were carried out in the tea manufacturing plant of the All-Union Scientific Research Institute for Tea Industry in Anaseuli, Gruzinian SSR. It was found that the first rolling, in which more than 50% of the leaf tissue are crushed, leads to an abrupt decrease in

Card 1/4

the amount of all catechins, l-epicatechingallate perhaps excluded (l-ℓ). During the second rolling (70% of the tissue crushed) the situation abruptly changes: The further decrease in l-epigallocatechingallate and l-epicatechingallate is not accompanied by a decrease in l-epicatechin and d,l-catechin. Moreover also l-epigallocatechin underwent only little quantitative changes during the second rolling. This indicates another reduction of the chinones of simple catechins developed in the course of the crushing of tissues. Kursanov and Bokuchava proved that the reduction of chinones occurs at the expense of the hydrogen of the concomitant substances: water, ascorbic acid, amino acid, catechins, etc. From the test results it may also be concluded that the gallo ethers of the catechins, unlike the simple catechins, are further oxidized and develop colored products. This is accompanied by an intensification in the color of the tea decoction. The third rolling is again accompanied by an intensive change of all catechins. On that occasion the amounts of d,l-gallocatechin and l-epicatechingallate are decreased most of all. The character of the change in catechins remains the same also now. This indicates that the last stage of the rolling (85%

Changes Occurring in Catechins in the Course of the Rolling up of Tea Leaves 20-114-4-49/63

of the tissue crushed) is accompanied by an oxidation condensation and by a solidification of all catechins of the tea-leaves. The data on the fermentation indicate this still more convincingly. After treatment of this kind for one hour the still remaining simple catechins disappeared completely. Small amounts of gallene ethers of simple catechins (l-epicatechin-gallate and -epigallocatechingallate) were found in the half-finished product. During the process of rolling about 50% of the so-called total tannine disappears. By the present experiments it was proved for the first time that the transformation of tannines, in connection with the crushing of the tissue, takes place at the expense of the transformation of the catechins contained in it. There are 1 figure, 1 table, and 10 references, 8 of which are Soviet.

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